8.6 NOISE

8.6.1 Affected Environment

Limited noise data are available for PTA. The dominant noise sources at PTA include military aircraft (mostly helicopters), military vehicle traffic, and ordnance use during live fire and other training exercises. Figure 8-13 illustrates estimated annual average noise contours from heavy weapons firing at PTA. Zone III noise conditions are contained within the present boundaries of PTA. Zone II noise conditions affect BAAF and the western portion of the cantonment area. Zone II noise conditions extend beyond the boundaries of PTA from BAAF westward to the northwest corner of the post. Except for the cantonment area, no noise-sensitive land uses are affected by existing Zone II noise conditions. No troops are permanently based at PTA. All troop housing is used for troops who are visiting PTA to participate in training exercises.

8.6.2 Environmental Consequences

Summary of Impacts

Noise sources associated with project alternatives at PTA would include construction activity, ordnance use, military vehicle traffic, and military aircraft operations. Noise from ordnance use would generate significant but mitigable impacts at the cantonment area and at the Mauna Kea State Park cabins under the Proposed Action or the RLA Alternative. In addition, noise from the use of blank ammunition and simulators in the WPAA may produce significant but mitigable noise impacts on the Waikiʻi Ranch development and the Kilohana Girl Scout Camp. Noise impacts from construction activities, military vehicle use, and military aircraft operations would be less than significant under all project alternatives.

Construction projects at PTA would be far enough from noise-sensitive areas to avoid significant noise impacts under both the Proposed Action and the RLA Alternative. There would be no construction noise impacts under No Action. The use of blank ammunition and SRTA would continue at PTA under all alternatives. The quantity of training ammunition used at PTA would increase somewhat under the Proposed Action or the RLA Alternative. Training activities at PTA could employ up to 400 vehicles at a time under the Proposed Action or the RLA Alternative. Resulting hourly average traffic noise levels along the PTA military vehicle trail would have less than significant impacts under all alternatives. Similarly, noise from vehicle maneuver activity at PTA would be a less than significant impact under all alternatives. Extensive helicopter flight operations would continue at PTA under all alternatives. UAV flight operations also would occur at PTA under the Proposed Action and the RLA Alternative. Noise generated by the added UAV flight activity would be a less than significant impact under the Proposed Action and the RLA Alternative.

Proposed Action

Significant Impacts Mitigable to Less Than Significant

Impact 1: Noise From Ordnance Use. Noise levels from weapons firing and ordnance detonations are quite variable, with noise levels at long distances influenced in part by weather conditions. Small arms firing can produce relatively high peak noise levels at

Figure 8-13
Existing Noise Levels at Pōhakuloa Training Area

Table 8-13
Summary of Potential Noise Impacts at Pōhakuloa Training Area

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Noise from construction activities	⊙	⊙	○
Noise from ordnance use	⊘	⊘	⊙
Noise from military vehicle use	⊙	⊙	⊙
Noise from aircraft operations	⊙	⊙	⊙
Noise from added personnel vehicle traffic	○	○	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant
⊘ = Significant but mitigable to less than significant
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

distances of up a few thousand feet. Peak unweighted noise levels for standard ammunitions used by 5.56 mm and 7.62 mm firearms are typically about 100 dB at 2,500 feet (762 meters) and about 83 dB at 5,000 feet (1,534 meters). Most other types of small arms produce lower peak noise levels. Most blank ammunition for small arms and machine guns has a smaller propellant charge than that used for live ammunition (US Army 1994), so noise from small arms blank ammunition typically generates noise levels about 4 dB below noise from live ammunition. Peak A-weighted dB levels will typically be about 5 dB units lower than the unweighted peak noise levels. Firing of large caliber weapons can produce high peak noise levels at larger distances, especially when weather conditions favor sound propagations. Detonations of high explosive ordnance can produce high peak noise levels at distances of several miles.

Future noise contours under the Proposed Action are illustrated in Figure 8-14. These noise contours (US Army CHPPM 2002b) are based on artillery firing and other high explosives use. Under the Proposed Action, Zone III conditions (with an Ldn above 70 dBC) would remain within the boundaries of PTA. Zone II conditions (with an Ldn of 62 to 70 dBC) would expand to include most of the cantonment area plus a portion of Mauna Kea State Park east of Saddle Road. The portion of the State Park that would be encompassed by the Zone II noise contour includes a picnic area with restroom facilities and some rental cabins. Expansion of Zone II noise contours to include most of the housing units in the cantonment area plus the rental cabins at Mauna Kea State Park would be a significant noise impact. Because the expansion of the Zone II contours would cover a relatively short distance, it is likely that there are management actions that could be taken to reduce the size of the predicted Zone II noise contour so that it does not include the picnic area and rental cabins at Mauna Kea State Park.

Figure 8-14
Proposed Action Noise Levels at Pōhakuloa Training Area

Use of blank ammunition and simulator devices in the WPAA area may create noise problems in the Waikiʻi Ranch development and the Kilohana Girl Scout Camp, both of which share fence line boundaries with the Peak unweighted noise levels from blank ammunition typically would be about 94 dB at 2,500 feet from the most common types of small arms. AR 200-1 uses an unweighted peak dB value of 87 dB for evaluating land use compatibility of noise from small arms firing. Locations more than 3,500 feet (1,067 meters) from the firing point would seldom experience unweighted peak noise levels above 87 dB when blank ammunition or other training ammunition is being used. Unweighted peak dB values from small arms firing of blank ammunition and weapons simulator use could produce episodes of annoying noise levels at Waikiʻi Ranch and the Kilohana Girl Scout Camp when training activities occur within a few thousand feet of these locations. Substantial portions of WPAA are more than 1 mile (1.6 kilometers) from the Waikiʻi Ranch development. An even greater portion of the WPAA is more than 1 mile (1.6 kilometers) from the Kilohana Girl Scout Camp. Training exercises are expected to occur 40 to 60 times a year in the WPAA, and some training events might last more than one day. However, blank ammunition and weapons simulators would not be used during all training events in the WPAA. Given the large size of the WPAA, it is reasonable to expect that management actions could be taken to reduce the frequency of noise disturbance at Waikiʻi Ranch and Kilohana Girl Scout Camp to acceptable levels.

Because appropriate management actions should be able to reduce heavy weapons noise impacts at Mauna Kea State Park and small arms noise impacts at Waikiʻi Ranch and Kilohana Girl Scout Camp, noise from ordnance use at PTA would be a significant but mitigable impact under the Proposed Action.

Regulatory and Administrative Mitigation 1. An updated ENMP is in preparation and should be used as a mechanism for exploring feasible ways to reduce the size of the predicted Zone II noise exposure area and methods for minimizing noise from training ordnance use in the WPAA. Relatively modest changes in the extent of nighttime training activity or in the choice of artillery firing points for nighttime training may be sufficient to eliminate Zone II noise exposure conditions at the picnic area and rental cabins at Mauna Kea State Park. The ENMP also would explore improved ways to notify surrounding communities about the scheduling and nature of nighttime training exercises that are possible sources of complaints about noise and vehicle activity. While enhanced public information programs would not reduce actual noise levels, they could help reduce the frequency of noise complaints.

Additional Mitigation 1. As part of the ENMP, the Army would establish a 500-foot (152-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army would consider training guidelines that minimize nighttime training activities within 1,000 feet (305 meters) of those properties.

Less than Significant Impacts

Noise from Construction Activities. The Proposed Action would include nine construction projects at PTA, with construction activities occurring from 2004 into 2007. Construction projects would include two training range facilities (a BAX and AALFTR), a tactical vehicle wash facility, an ammunition storage facility, a range maintenance facility, an upgrade and

realignment of BAAF, a military vehicle trail between Kawaihae Harbor and PTA, a communications cable system, and 11 FTI towers. UXO clearance would be required prior to construction of the BAX and AALFTR ranges.

Individual items of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (15 meters). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet (122 to 244 meters) from the site of major equipment operations. Locations more than 1,000 feet (305 meters) from construction sites seldom experience significant levels of construction noise. Table 8-14 summarizes the estimated minimum distance between the sites for proposed construction projects and the nearest noise-sensitive land uses.

Table 8-14
Estimated Minimum Distance Between Construction Sites and Noise-Sensitive Land Uses

Proposed Project	Distance to Closest Noise-Sensitive Receptor	Noise-Sensitive Land Use Type
P1. Battle Area Complex	7,230 feet	troop housing
	10,750 feet	Mauna Kea State Park cabins
	40,060 feet	Kilohana Girl Scout Camp
	44,500 feet	Waikiʻi Ranch
P2. Anti-Armor Live Fire & Tracking Range	21,510 feet	troop housing
	23,540 feet	Mauna Kea State Park cabins
	52,460 feet	Kilohana Girl Scout Camp
	56,900 feet	Waikiʻi Ranch
P5. Ammunition Storage	4,960 feet	troop housing
	5,990 feet	Mauna Kea State Park cabins
P6. Tactical Vehicle Wash	2,690 feet	troop housing
	7,030 feet	Mauna Kea State Park cabins
P8. Range Maintenance Facility	390 feet	troop housing
	5,790 feet	Mauna Kea State Park cabins
P9. Bradshaw Airfield Upgrade	2,890 feet	troop housing
	8,270 feet	Mauna Kea State Park cabins
	36,250 feet	Kilohana Girl Scout Camp
	40,690 feet	Waikiʻi Ranch
P10. Fixed Tactical Internet	not evaluated	construction activities too limited to create noise issues
P3. PTA Vehicle Trail	9,540 feet	Kilohana Girl Scout Camp
	6,670 feet	Waikiʻi Ranch
P11. Installation Information Infrastructure Architecture	not evaluated	minor construction noise from trenching along roadway shoulders in cantonment area
S10. Qualification Training Range 2 (QTR2)	24,350 feet	troop housing
	22,730 feet	Mauna Kea State Park cabins
	57,230 feet	Kilohana Girl Scout Camp
	61,680 feet	Waikiʻi Ranch

Note: QTR2 would be built at PTA only under Reduced Land Acquisition.
Source: Tetra Tech staff analyses

Most construction activity would be too far from noise-sensitive land uses to create any noise problems. Troop housing in the cantonment area would be the only noise-sensitive land use within 1 mile (1.6 kilometers) of any construction project sites. The range maintenance facility would be constructed at a site within the cantonment area that is close to some of the troop housing facilities. Although further removed from the cantonment area troop housing, construction activities at BAAF would involve substantial pavement removal and repaving activities.

Figure 8-15 illustrates expected construction noise levels for the noisiest stage of construction activity for the proposed range management facility. Construction activities for the range maintenance facility would generate average daytime noise levels of about 71 dBA at the closest troop housing Quonsets huts. The Ldn increment generated by construction activities would be about 68 dBA at these housing units. No nighttime construction activity is expected. Because there would be no nighttime construction activity and occupants of the troop housing facilities are not at PTA for extended periods of time, noise from construction of the range maintenance facility would be a less than significant impact.

Figure 8-16 illustrates expected construction noise levels during the noisiest stage of construction at BAAF. The closest noise-sensitive land uses are more than 2,500 feet (762 meters) from the end of the proposed new runway at BAAF. As indicated in Figure 8-15, average daytime noise increments at the western side of the cantonment area would be less than 55 dBA during the noisiest stage of construction. Consequently, construction activities associated with modifications to BAAF would have a less than significant noise impact.

The proposed tactical vehicle wash facility at PTA would be slightly closer to the cantonment area than BAAF. As illustrated previously by Figure 5-19 in Chapter 5, construction activities for vehicle wash facilities would produce noise levels slightly lower than those generated at the cantonment area by the BAAF modifications. All other construction projects are either further away from noise-sensitive land uses or would require minimal construction equipment. Consequently, noise from construction projects at PTA would be a less than significant impact under the Proposed Action.

Noise from Military Vehicle Use. Military vehicle use at PTA would involve troop and equipment transport activities and vehicle maneuver activities. Troop and equipment transport activities would occur within PTA boundaries, between PTA and Kawaihae Harbor, and between PTA and other locations on the island of Hawai'i. Most military vehicle travel between Kawaihae Harbor and PTA would occur on the proposed PTA Trail, resulting in less military vehicle traffic on Saddle Road. Saddle Road would continue to provide access to other off-post areas.

Estimated peak pass-by noise levels and average traffic noise levels for military vehicles were discussed in Chapter 5, Section 5.6.2 and illustrated in Figure 5-21. Noise levels from individual vehicle pass-bys vary with vehicle type and speed. Vehicle speeds would be relatively low on unpaved roads and during off-road vehicle maneuvers. Noise levels

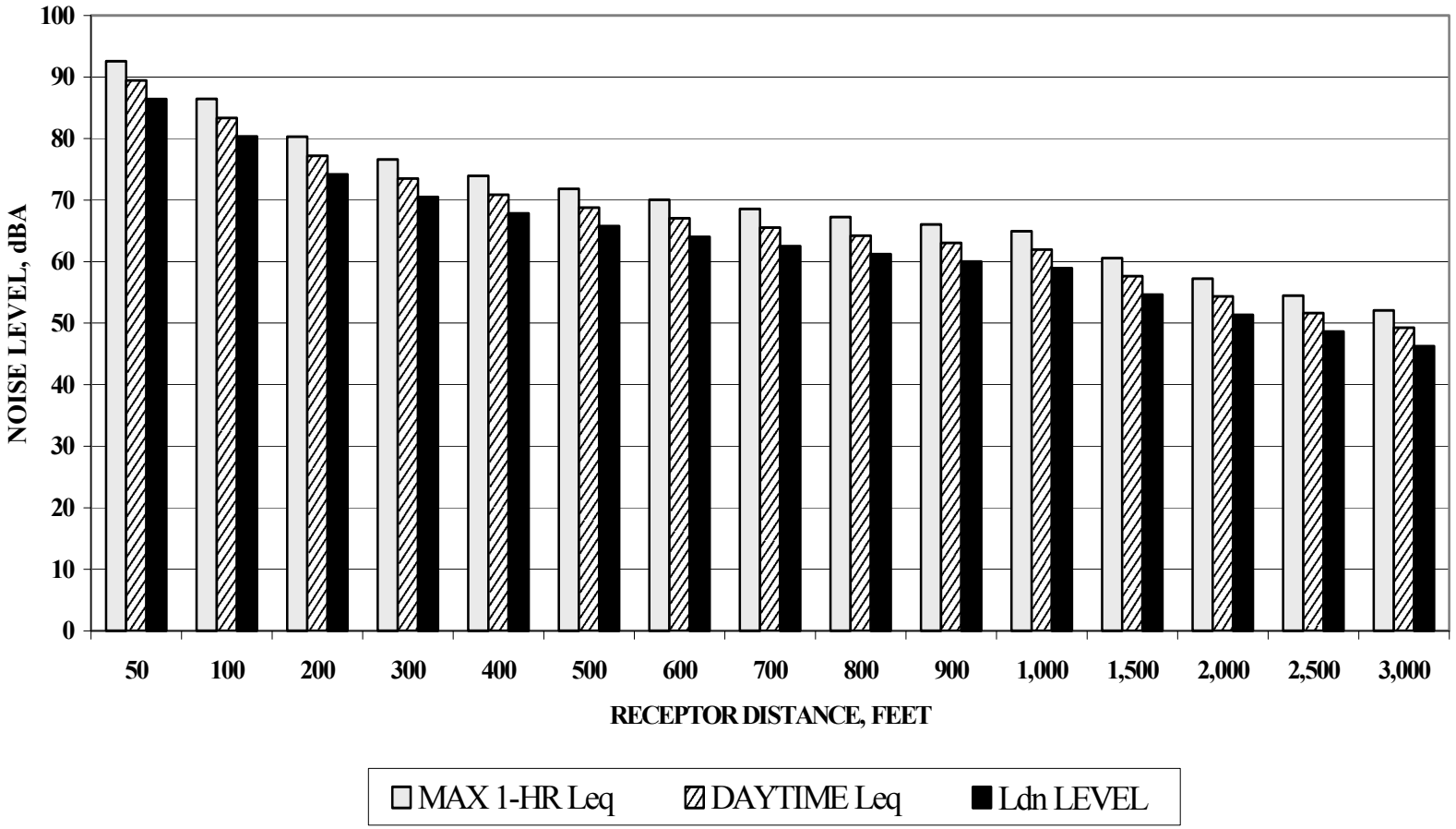

Figure 8-15 Construction Noise Impacts for PTA Range Maintenance Facility: Building Shells and Paving

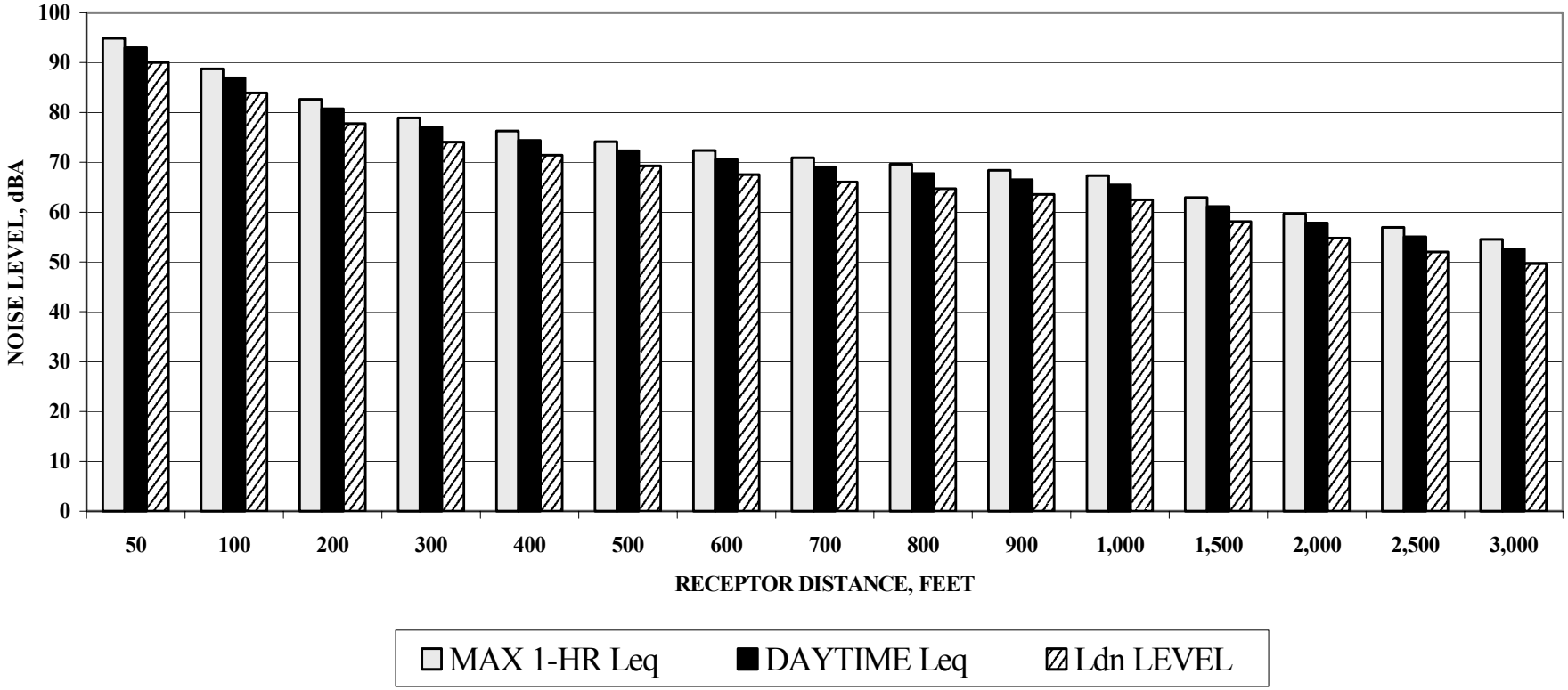

Figure 8-16 Construction Noise impacts for PTA Bradshaw Airfield Upgrade: Pavement Removal

generated by HMMWVs and two axle military trucks would be comparable to noise from medium trucks (about 65 to 70 dBA at 50 feet [15 meters]). Multi-axle heavy trucks would generate noise levels comparable to other heavy duty trucks (about 78 to 80 dBA at 50 feet [15 meters]). The Stryker vehicle is expected to produce peak pass-by noise levels a few decibels higher than the noise generated by multi-axle heavy trucks (about 85 dBA at 50 feet [15 meters]). Peak pass-by noise levels would drop by 15 dBA at a distance of 500 feet from the travel path.

Figure 8-17 illustrates typical hourly average noise levels along PTA Trail during hours when there is a relatively large volume of military vehicle traffic. Training activities at PTA are expected to employ up to 400 vehicles at a time. If 400 vehicles traveled along PTA Trail in a single hour, resulting noise levels would be about 75 dBA at a distance of 50 feet (15 meters) from the vehicle trail, about 65 dBA at 300 feet (91 meters) from the vehicle trail, about 61 dBA at 500 feet (152 meters) from the trail, and about 56 dBA at 1,000 feet (305 meters) from the trail. As indicated in Table 8-14, PTA Trail is well over 1 mile from the Waikʻi Ranch development and the Kilohana Girl Scout Camp. Consequently, vehicle traffic on PTA Trail would have a less than significant noise impact.

Vehicle maneuver activity at PTA would include use of unpaved roads and use of off-road maneuver areas. Unpaved roads used by military vehicles occur throughout the installation. Most off-road vehicle maneuver activity under the Proposed Action would occur in or close to the WPAA. Vehicle noise during these activities would include peak pass-by noise levels as noted above and average hourly noise levels as illustrated in Figure 8-17. Vehicle maneuvers would occur during both daytime and nighttime hours, making vehicle maneuver activity noise an issue of concern for the Waikʻi Ranch development and the Kilohana Girl Scout camp. Because vehicle speeds are low during most maneuver activities and because vehicles tend to be relatively dispersed during off-road maneuvers, maneuver activities would be expected to produce hourly average noise levels of less than 55 dBA at a distance of about 500 feet (152 meters), with brief peaks of 65 to 70 dBA. Such noise levels would not cause significant noise impacts at off-post noise-sensitive land uses during daytime hours. These noise levels would be more disturbing during nighttime hours. As long as nighttime vehicle maneuver activity is minimized within 1,000 feet (305 meters) of the Waikʻi Ranch and the Kilohana Girl Scout Camp, vehicle noise from training and maneuver activities would be a less than significant impact under the Proposed Action.

As part of the ENMP, the Army would consider establishing a 500-foot (152-meter) noise buffer around the Waikʻi Ranch property and the Kilohana Girl Scout Camp property, and minimizing nighttime vehicle maneuver activities within 1,000 feet (305 meters) of those properties.

Noise from Aircraft Operations. The Proposed Action would not result in any meaningful changes in helicopter flight operations at PTA. Modifications to BAAF would accommodate fixed wing cargo aircraft operations, allowing the use of C-130 and C-17 aircraft for troop and cargo transport between Oʻahu and PTA. UAV flight operations also would be introduced at PTA under the Proposed Action. Figure 5-23 in Chapter 5 illustrated peak

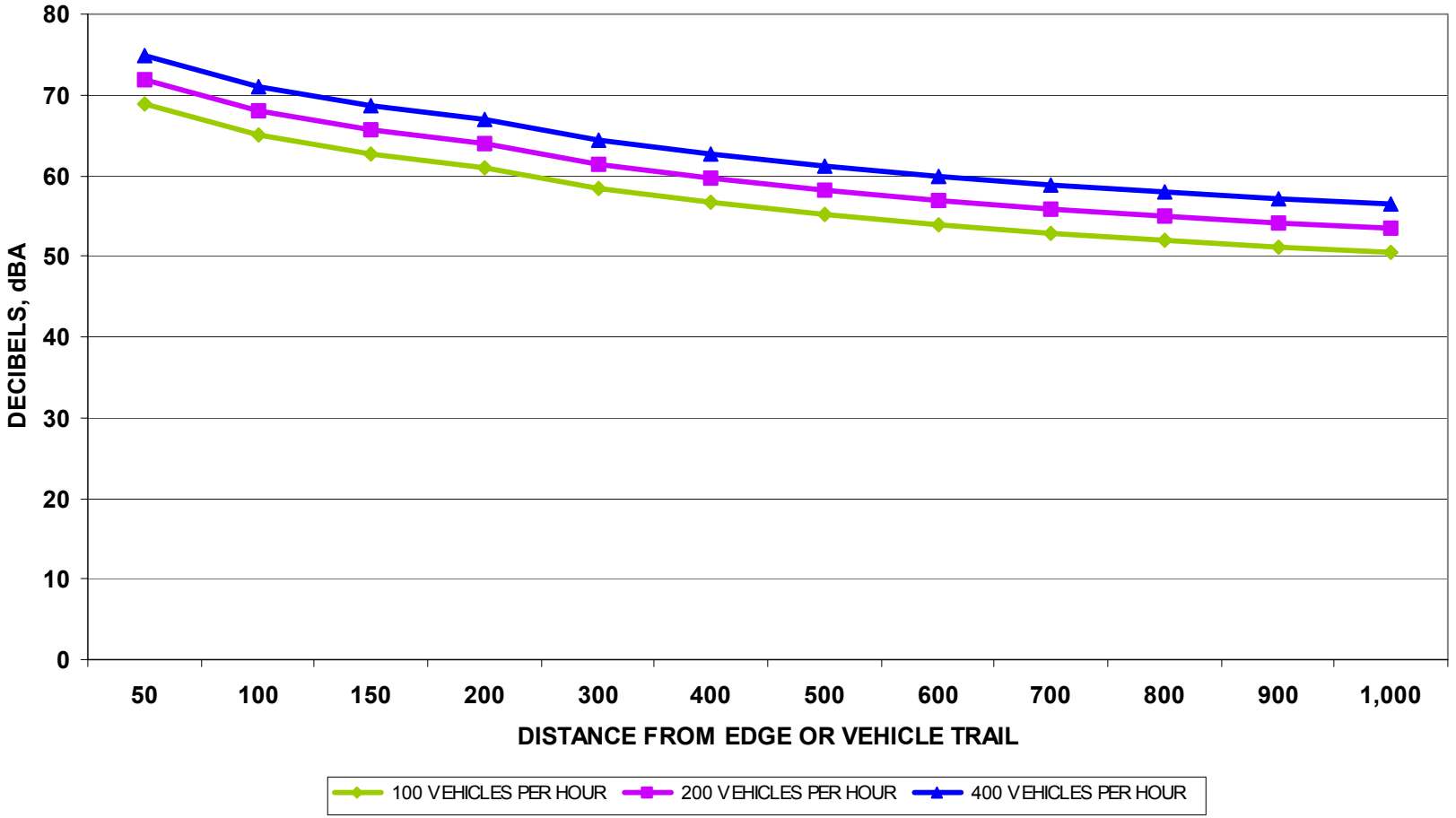

Figure 8-17 Hourly Average Noise Levels along Pōhakuloa Military Vehicle Trail

flyover event noise levels for various helicopters, fixed wing aircraft, and the UAV. Peak flyover event noise levels vary with aircraft type and flight altitude. Smaller helicopters produce peak noise levels above 85 dBA when operating at altitudes lower than 200 to 250 feet (61 to 76 meters) above ground level. Large helicopters and fixed wing cargo aircraft produce peak noise levels above 85 dBA when operating at altitudes lower than 400 to 500 feet (122 to 152 meters) above ground level. The Shadow 200 UAV would produce peak noise levels above 85 dBA when operating at altitudes lower than 300 feet (91 meters) above ground level.

Helicopters normally operate at low flight altitudes. C-130 and C-17 cargo aircraft would be at low flight altitudes during the final landing approach to and the early stages of departures from BAAF. In most cases, the UAV would be expected to operate at relatively high altitudes to avoid conflict with other helicopter and aircraft flight activity. Overall aircraft activity at PTA would continue to be dominated by helicopter operations. The number of added cargo aircraft and UAV flight operations would be relatively small in comparison to continuing helicopter flight operations. Although residents of areas near PTA would continue to file occasionally complaints about low flying aircraft and helicopters, the complaints generally would be about discrete flyover events rather than overall average noise levels. Consequently, noise from aircraft operations at PTA would be a less than significant impact under the Proposed Action.

No Impact

Noise from Added Personal Vehicle Traffic. None of the personnel added under the Proposed Action would be based at PTA. Consequently, there would be no noise from added personal vehicle traffic at PTA under the Proposed Action.

Reduced Land Acquisition

Significant Impacts Mitigable to Less Than Significant

Impact 1: Noise From Ordnance Use. Noise levels from weapons firing and ordnance detonations under the RLA Alternative would be essentially the same as under the Proposed Action. Small arms firing at QTR2 would not alter overall noise contours, which are dominated by heavy weapons firing. Future noise contours from heavy weapons use would be the same as illustrated in Figure 8-14. As under the Proposed Action, Zone II conditions (with an Ldn of 62 to 70 dBC) would expand to include most of the cantonment area plus a portion of Mauna Kea State Park east of Saddle Road. The portion of the State Park that would be encompassed by the Zone II noise contour includes a picnic area with restroom facilities and some rental cabins. Expansion of Zone II noise contours to include most of the housing units in the cantonment area plus the rental cabins at Mauna Kea State Park would be a significant noise impact. Because the expansion of the Zone II contours would cover a relatively short distance, it is likely that management actions could be taken to reduce the size of the predicted Zone II noise contour so that it does not include the picnic area and rental cabins at Mauna Kea State Park.

As discussed for the Proposed Action, use of blank ammunition and simulator devices in the WPAA have the potential to create noise problems in the Waikiʻi Ranch development and

the Kilohana Girl Scout Camp. Given the large size of the WPAA, it is reasonable to expect that management actions could be taken to reduce the frequency of noise disturbance at Waikiʻi Ranch and Kilohana Girl Scout Camp to acceptable levels.

Because appropriate management actions should be able to reduce heavy weapons noise impacts at Mauna Kea State Park and small arms noise impacts at Waikiʻi Ranch and Kilohana Girl Scout Camp, noise from ordnance use at PTA would be a significant but mitigable impact under the RLA Alternative.

Regulatory and Administrative Mitigation 1. An updated ENMP is in preparation and should be used as a mechanism for exploring feasible ways to reduce the size of the predicted Zone II noise exposure area and methods for minimizing noise from training ordnance use in the WPAA. Relatively modest changes in the extent of nighttime training activity or in the choice of artillery firing points for nighttime training may be sufficient to eliminate Zone II noise exposure conditions at the picnic area and rental cabins at Mauna Kea State Park. The ENMP also would explore improved ways to notify surrounding communities about the scheduling and nature of nighttime training exercises that are possible sources of complaints about noise and vehicle activity. While enhanced public information programs would not reduce actual noise levels, they could help reduce the frequency of noise complaints.

Additional Mitigation 1. As part of the ENMP, the Army would consider establishing a 500-foot (152-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp property. In addition, the Army would consider training guidelines that minimize nighttime training activities within 1,000 feet (305 meters) of those properties.

Less than Significant Impacts

Noise from Construction Activities. Reduced Land Acquisition would require the same new facilities as the Proposed Action. In addition, QTR2 would be constructed at PTA instead of at SBMR. As noted in the discussion for the Proposed Action, noise-sensitive land uses would be far enough from construction sites to avoid significant noise impacts. Consequently, construction activities would have a less than significant noise impact under the RLA Alternative.

Noise from Military Vehicle Use. Military vehicle use associated with PTA would be the same under the RLA Alternative as previously discussed under the Proposed Action. As would be the case for the Proposed Action, military vehicle use at PTA would have a less than significant noise impact under the RLA Alternative.

Noise from Aircraft Operations. Aircraft, helicopter, and UAV use associated with PTA would be the same under the RLA Alternative as previously discussed under the Proposed Action. Although residents of areas near PTA would continue to file occasionally complaints about low flying aircraft and helicopters, the complaints generally would be about discrete flyover events rather than overall average noise levels. As noted in the discussion of the Proposed Action, aircraft operations at PTA would have a less than significant noise impact under the RLA Alternative.

No Impact

Noise from Added Personal Vehicle Traffic. None of the personnel added under RLA would be based at PTA. Consequently, there would be no noise from added personal vehicle traffic at PTA under the RLA Alternative.

No Action

Less than Significant Impacts

Noise from Ordnance Use. Existing training exercises would continue at PTA under No Action. The PTA West acquisition would not occur, so there would be no added small arms firing near Waikiʻi Ranch or the Kilohana Girl Scout Camp. Noise contours from heavy weapons firing would remain as illustrated in Figure 8-13. While individual detonation events would continue to produce occasional events of high noise levels in the cantonment area and at off-post noise-sensitive areas, overall noise conditions would remain acceptable for current land use patterns. Consequently, noise from ordnance use under No Action would be a less than significant impact.

Noise from Military Vehicle Use. Military vehicle use associated with PTA would be less under No Action than under the Proposed Action or the RLA Alternative. No Stryker vehicles would be used under No Action. Noise levels produced by a continuation of existing vehicle use patterns at PTA would have a less than significant noise impact under No Action.

Noise from Aircraft Operations. Existing patterns of aircraft and helicopter use of airspace over PTA would continue under No Action. Although residents of areas near PTA would continue to file occasionally complaints about low flying aircraft and helicopters, the complaints generally would be about discrete flyover events rather than overall average noise levels. Noise levels produced by a continuation of existing aircraft operations at PTA would have a less than significant noise impact under No Action.

No Impact

Noise from Construction Activities. No specific construction projects are proposed under No Action. Consequently, there would be no construction noise impacts under No Action.

Noise from Added Personal Vehicle Traffic. There would be no personnel based at PTA under No Action. Consequently, there would be no noise impact from added personal vehicle traffic.